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Titre : Impact of COVID-19 pandemic on presentation, management of acute care surgery for gallbladder disease and acute appendicitis

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Introduction:

Early-on, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic necessitated widespread shifts throughout healthcare systems in an effort to preserve hospital resources, maintain capacity, and minimize infection risk (1). Consequently, the pandemic has significantly disrupted both elective and acute medical care (2). Data from the early months suggest that acute care patient populations deferred presenting to the emergency department (ED), having more severe disease at the time of presentation. Additionally, more complicated presentation. Gallbladder disease and appendicitis are common surgical conditions diagnosed among patients presenting to the emergency department (ED).

The aim of this study is to examine the presentation, management of patients who developed gallbladder disease or appendicitis during the pandemic.

Patient and Methods :

A retrospective chart review of patients diagnosed with acute cholecystitis, or appendicitis in general surgery department Monastir between July and December, 2020 and in the same months of 2019. Patients were selected through a research repository using international classification of diseases codes. Across both years, 58 patients were identified with either type of gallbladder disease, while 281 patients were identified with acute appendicitis. Outcomes included presentation, management, complications, and 30-d re-presentation rates. Relationships between different variables were explored using Pearson's r correlation coefficient. Variables were compared using the Welch's t-Test, Chi-squared tests, and Fisher's exact test as appropriate.

Results:

Three hundred and thirty nine patients were identified overall. There were no significant differences between the COVID-19 pandemic and control cohorts in either disease group with respect to age, gender and comorbidities. The share of patients with acute cholecystitis was greater during 2019 compared to the COVID-19 pandemic (55% VS 44% p= 0.2). Although statistically significant, the duration of symptoms prior to presentation was longer in the COVID-19 cohort than in the control group [mean (SD) 4.2 d (12.7) vs 2.9 d (5.8); P = 0.212]. Patients had more severe presentations in 2020. Patients presented with more severe cholecystitis in 2020 as indicated by higher mean Tokyo Criteria Scores. 12.5 % in 2019 were complicated VS 46% in 2020 p<0.001.

		2019 N(%)	2020 N(%)	p
severity of appendicitis	grade1	90 (63.4)	72 (52.6)	0.06
	> grade 1	52 (36.6)	65 (47.4)	

There is no significant differences in the share of patients with appendicitis between the two periods [144 (51.2%) VS 137 (48.8%)]. More patients were diagnosed with a perforated appendix at presentation in 2020 [1.4% vs 5.1% ; P = 0.02]. No significant differences were observed in hospital admissions for patients with appendicitis and cholecystitis. No significant differences were observed in length of hospital stay

discussion:

In our study, both patients with gallbladder disease and appendicitis presented with more severe cases during the COVID-19 pandemic.

Patients diagnosed with cholecystitis during the pandemic had more severe disease as evidenced by higher mean Tokyo Criteria scores. It is plausible that delays in presentation partially accounted for the observed severity rise, as symptom duration ≥ 72 h increases the severity score from Tokyo Criteria grade I to grade II (3).

Similar to the gallbladder disease cohort, although rates of presentations for appendicitis remained stable during the pandemic, a greater proportion of patients presented with more severe appendicitis cases in 2020 as demonstrated by higher ED severity scores, and higher antibiotic rates at discharge. Furthermore, more patients in the COVID-19 appendicitis cohort were diagnosed with perforated appendicitis at presentation. If appendicitis is untreated, the risk of rupture has been shown to rise over the first 36 h after symptom onset. Our findings are consistent with a robust body of literature evidencing increased incidence of complicated appendicitis (e.g., perforation, peri-appendicular abscess, and gangrenous appendicitis) during the COVID-19 pandemic.

Understanding such changes in presentation, management, and outcomes of various disease processes during the COVID-19 pandemic is essential for preparing for any future surges or other public health crises. Multiple studies have previously reported delays in medical care attributable to COVID-19, resulting in higher morbidity and mortality. Stay-at-home orders and social distancing guidelines, fear of contracting coronavirus, and concerns regarding overburdening the healthcare system are just some of the factors that may have influenced patients' delayed presentation for care and resulting clinical status. Our finding, that patients with gallbladder disease and appendicitis also presented with disease of greater severity, adds to the body of literature raising concerns around the need to limit healthcare utilization during the pandemic, while also ensuring that patients do not avoid care at the cost of developing more advanced disease.

Conclusion:

During the COVID-19 pandemic, patients presented with more severe gallbladder disease and appendicitis. These findings suggest that the pandemic has affected patients with acute surgical conditions. It appears that the pandemic has affected patient decision-making, provider management approaches, as well as outcomes of acute care surgical conditions.

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